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Scenario Planning - The future now

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6 SCENARIO PLANNING – THE FUTURE NOW

Boo Edgar and Sverker Alänge, University of Gothenburg and Chalmers

Boo is Associate Professor at the Sahlgrenska Academy, University of Gothenburg. He is also the Director of the Gothenburg International Bioscience Business School, GIBBS, which is a joint initiative by Chalmers University of Technology, University of Gothenburg and the Sahlgrenska Academy, and was created in close collaboration with the regional health care organization and biotech/pharmaceutical companies. Boo's professional experience and career development span several areas within the pharmaceutical industry and life science area, including clinical pharmacology and clinical research, project management, R&D Strategy Development and leading a discovery and research company. Previously, his main area of research was in the field of pharmaceutical development, but he now focuses on the innovative power of biomedical research. Among other things, he is conducting research into how the ability to embrace new ideas and entrepreneurship is influenced by attitudes, management and education. At the moment he's involved in three EU projects covering these areas but also including the introduction of emerging innovations in regenerative medicine in Europe. Boo is also an entrepreneur. Altogether he has been involved in more than a dozen start-ups, and in his role within the entrepreneurship schools at Chalmers and University of Gothenburg, he has supported around 25 venture creations. He is active in the boards of several young start-ups.

Sverker is Associate Professor in Technology Management. His research interest is in innovation, sustainability, entrepreneurship and learning & change processes. He has long experience of working with change processes in industry and at universities, both in Sweden and internationally. Present research projects are focused on sustainable innovativeness, industrial design-product development interactions, large-scale change processes in industry, universities and innovation systems, and sustainable business development.

*"[Scenario planning] is a powerful tool that tests the mind, challenges belief, stretches the spirit, and at its best creates new sources of hope. People who take naturally to scenario thinking are lifelong learners; they believe that the world is continually changing and are forever seeking insight from new places, making new connections, and innovating new solutions."
– Scarce et al.¹*

SUMMARY

A new project idea, irrespective of origin and organizations, will always need to react and adapt to the operating environment in order to survive. However, the most successful organizations will predict the future with intelligent insight, enabling them to change proactively to maintain competitive advantage.

Traditional planning techniques use predictions, forecasts and projections, but they may not be able to cope with 'disruptive' changes in the environment. A more powerful approach is scenario

planning, which can be seen as a rediscovery of the original entrepreneurial power of creative foresight in the context of accelerated change, greater complexity and genuine uncertainty. In practical terms, this involves thinking, unconstrained by the present, to consider plausible future options. It is about making choices today with an understanding of how they might turn out tomorrow.

This chapter reviews the process tools available for scenario planning. The key steps are as follows.

1. Identify the focal issue or decision.
2. Identify the key forces in the environment.
3. What are the driving forces?
4. Identify and rank factors by importance and uncertainty.
5. Select and build the scenario stories.
6. Flesh out the scenario details and their implications.
7. What will be the leading indicators and signposts?
8. Communicate and represent the scenarios to the contributors.

In conclusion, it would without doubt be helpful to have insight into the future. Scenario planning is a robust method for taking the guesswork out of the equation as far as possible while retaining the ability to consider a variety of plausible eventualities. This approach is therefore particularly useful when considering the longer term and/or situations in which unexpected changes may disrupt previous trends.

INTRODUCTION

If you could become a time traveler, what would you do? If others were aware that you could travel through time, just imagine their interest and the questions they would ask.

- How would you learn about the future and what would you do with that knowledge?
- Should you take the opportunity to gain financially from knowing the result of the next horse race, football game, lottery or Nobel Prize awards?

Although not used in this way in H.G. Wells' book *The time machine*,² which was written in 1895, more recent books, plays and movies based on this theme have included individual and corporate gain as part of the plot. Would you be happier if you knew the future? Would your planning improve in all essentials?

DEFINITION OF SCENARIO PLANNING

The uncertainty we face globally results from the interaction of many forces: technological, scientific, cultural, social, political, human, economic and environmental.^{3,4} Substantial resources have been applied and various methods have been developed, such as the Delphi method, without noticeable improvement in our insight into the future. But another method deserves

closer inspection. This method – now known as scenario planning – was first developed with a focus on military needs, but was later applied to the business environment at Royal Dutch/Shell by Kahn and Weiner.⁵ The term ‘scenario planning’ was coined somewhat later by the RAND Corporation.⁴

Scenario planning is the process of creating several varied but plausible views (scenarios) of the future and then examining these in depth. It considers the uncertainties and driving forces that may impact on the future. This allows a company to anticipate possible futures, stimulating both review of current corporate strategies and thought about novel strategies.

Pierre Wack, one of the originators of scenario planning as it is commonly used today, described it as a discipline for encouraging creative and entrepreneurial thinking and action “in contexts of change, complexity, and uncertainty”.²

Scenarios describe futures that *could* be, rather than futures that *will* be.^{6,7} They are alternative, dynamic ‘stories’ that capture key ingredients of our uncertainty about the future; they are plausible but not necessarily ‘likely’. These stories are used to try to improve our understanding of the world and its behavior. The relationship between different factors contributing to the creation of such stories was analyzed and described by the *WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT (WBCSD)*, with input from a number of global companies.⁸ The group presented the relationship shown in Figure 1.

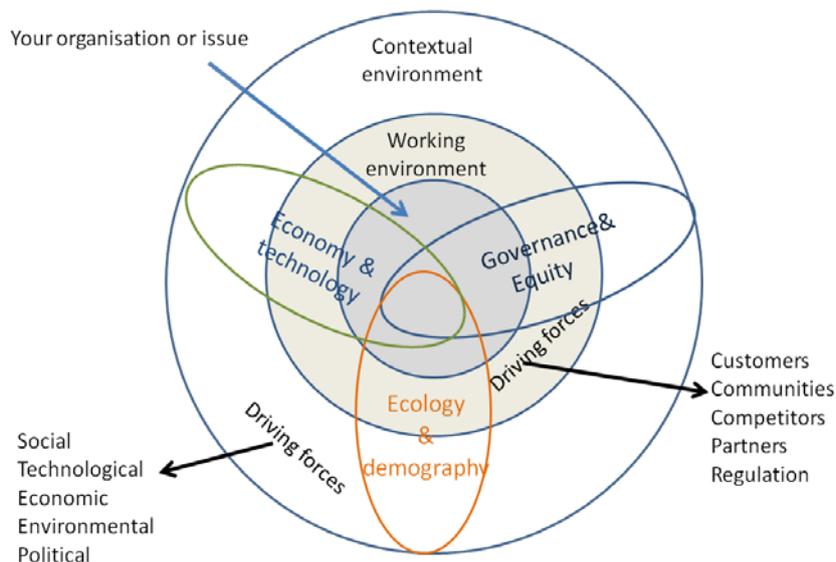


Figure 1. Different factors contribute and are driving forces (see further below) for the development of our views of the future. Adapted from World Business Council for Sustainable Development.⁸

Traditional strategic planning takes one or two of these factors into consideration. This suffices when levels of uncertainty are low and levels of control high. However, scenario planning can have advantages when there are high levels of uncertainty and poor control.

The Global Business Network *What if?* report quotes science fiction writer Bruce Sterling:^{1,9}

“Futurism is an art of re-perception. It means recognizing that life will change, must change, and has changed, and it suggests how and why. It shows that old perceptions have lost their validity, while new ones are possible.”

Scenario planning strives to achieve these new perceptions and therefore to equip individuals and organizations to perform well in times of change.

PLANNING METHODS

In this section, we discuss various practical planning tools, including scenario planning and some traditional methods, such as regression analysis. Some of these methods are simplistic, others more complicated. Backcasting is an important part of the planning process and is discussed in Chapter 5.¹⁰

In relation to sustainable business, we will consider:

- regression analysis, based on predictions, forecasts and projections
- scenario planning, including disruptive techniques.

Figure 2 indicates the circumstances in which the different methods are most appropriate.

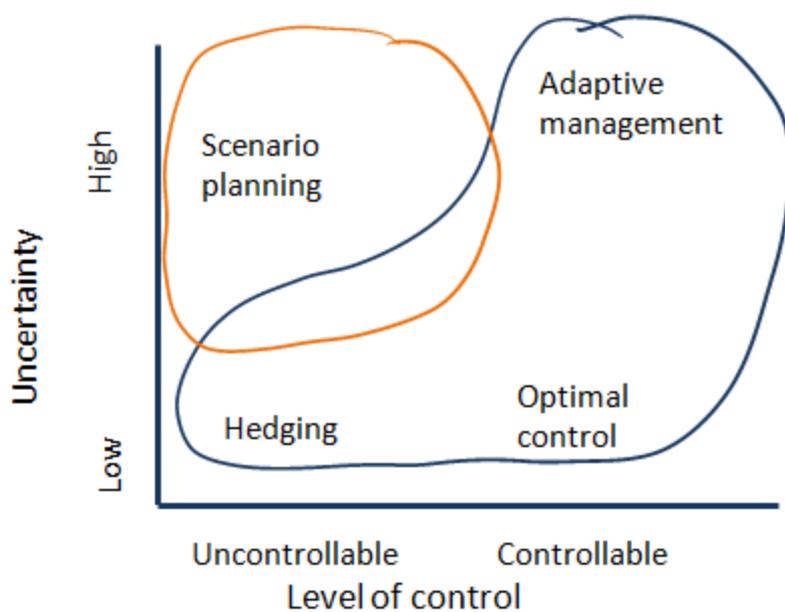


Figure 2. Regression analysis (blue) provides good predictions in some circumstances, but when uncertainty is high and the level of control is poor, scenario planning is more useful. Adapted from Peterson et al. (2003)¹¹

THE MORE LIKELY FUTURE

Traditional planning methods seek to identify the ‘more likely’ future. Societal perceptions, personal beliefs and a lot of structured knowledge (facts) all contribute to provide a best ‘guesstimate’ of the future, but the major underlying assumption is that things will go on in roughly the same way as they did before.

PREDICTIONS

A prediction presents the likely future at a specified time, based on specified assumptions. It is conditional on how things currently are, and is based on particular beliefs about the drivers. It is often determined from measured probability distributions of model parameters, and assumes that the measured probability of the chosen model itself is correct.¹² A prediction is therefore understood to be the best possible estimate of future conditions under specified assumptions. The less sensitive the prediction is to the quality of the drivers, the better.^{5,13}

Scientists understand that predictions are conditional probabilistic statements; non-scientists often understand them as things that will happen no matter what they do.^{4,5,13,14}

FORECASTS

Forecasts, in contrast to predictions, are the best estimates from a given model or the expressed thoughts of one or several individuals. Both of these, forecasts and predictions, are closely tied to optimal decision-making.^{8,15} This could also be described as follows: if we do this, that will happen (e.g. if we support this decision about production, the market share will increase). Optimal decision-making or adaptive management is thought to maximize the expected net benefits or minimize expected net losses, where the expectation is integrated over a specified time horizon. Optimal control and hedging represent active and passive approaches to optimal decision-making.¹⁶

REGRESSION ANALYSIS

Regression analysis is usually based on historical data on sales performance, development history, and perceived need in the present and in the future, with the help of reports (often industry-driven) and mathematical models derived from historical analysis of the data sets. Linear or non-linear regression analysis is then used to extrapolate into the future. Known competitors (on a company or product level) will complicate the analysis, because they could behave differently depending on the circumstances, such as the nature of the threat and their financial performance.

The more concrete the data available to feed into the model, the better the forecasts and predictions will be. This enables companies to assess which strategy appears to be optimal and

provides guidance on timing and amount of investment in resources. However, the work process is similar to that used in scenario planning, as may be seen later in this chapter.

LACK OF RESPONSIVENESS

The risk with this kind of planning is that it does not move beyond the tangible and quantifiable issues that management usually considers, and can therefore lack responsiveness. It may be more difficult for management to adapt, anticipate, recognize and respond proactively, particularly if there are large changes.

THE POSSIBLE FUTURE

Uncertainty can be confusing and demoralizing, but it can also inspire action because the future is not already determined. The future is being created by the plans and actions of people.

Scenario planning stresses that there are uncertainties that are not controllable by the people making the decisions, and focuses on plausible (and not necessarily likely) stories. This is a different approach from forecasting or predicting, both of which focus on the more likely situation.

Scenario planning is ideal when:

1. you are dealing with a strategic issue
2. the proposed solution is unclear
3. there is no clear solution to the issue (disruptive innovations should be sought)
4. you are working in an uncertain environment
5. the organization is open to change and dialogue
6. you have support for a process
7. you can attract the necessary resources.

Among the tools that a manager can use for strategic planning, scenario planning stands out. It has already been used to:⁴

1. spot and utilize disruptive political changes (Eastern Bloc)
2. develop service business models (Electrolux, SKF)
3. anticipate the 1973 energy crisis (Royal Dutch/Shell)
4. identify future needs in biotechnology (WBSCD)
5. create new product ideas and new business opportunities (General Electric)
6. develop sustainable energy (WBSCD)
7. formulate business proposals for non-profit organizations (Global Business Network)
8. investigate the impact of disruptive innovation on businesses (IT industries)
9. develop capabilities and education for the future (Price Waterhouse Coopers).

The use of scenario planning is increasing – and will continue to grow – because it is a proven technique for developing understanding and managing uncertainty (see Case study). It is a challenging approach, but one that promotes greater insight, innovation and adaptability. Scenario planning is also a learning tool and an instrument for sharpening strategic thinking. The scenarios help us to understand the logic of developments, and to clarify the driving forces and key players, as well as our own potential to influence.¹⁷

Case study

In his ‘progress with strategy’ videos (www.gsk.com/investors/presentations_webcasts.htm) Andrew Witty, CEO of GSK, credits scenario planning for his changing approach to the business since his appointment only 18 months ago. In response to GSK's reliance on prescription products, and to increasing health technology assessment making market access more difficult in the traditional markets, Witty has altered the strategic direction of GSK to:

- move away from selling ‘little white pills’ and towards vaccines and biologicals
- reduce its focus on the USA, Japan and the top five European markets and increase its focus on emerging markets such as Brazil, Russia, China, Mexico and the Middle East
- disinvest where the margins are no longer favorable
- redeploy assets to the emerging markets
- focus more on consumer-accessible products
- concentrate on products protected by intellectual property rights
- increase efficiency and drive down costs.

By identifying basic trends and uncertainties, a team – rather than an individual – can develop a story line for a series of scenarios that may overcome the flaws in usual planning and decision-making, namely over-confidence and tunnel vision.^{12,18} Table 1 summarizes the differences between scenarios, forecasts and predictions.

Scenarios	Forecasts	Predictions
Plausible futures	Probable futures	Based on past performance
Based on uncertainty	Based on greater levels of certainty	Based on political pressure/lobbying
Illustrate risks	Hide risks	Well hidden risks
Qualitative or quantitative	Quantitative	Quantitative and pressured
Used rarely	Used daily	Every day
Strong for a medium- to long-term perspective and when there are uncertainties	Strong for a short-term perspective and when there is a low degree of uncertainty	Strong for short-term and where there are strong political pressures

Table 1. Summary of differences between scenarios, forecasts and predictions. Adapted from Lindgren and Bandhold (2003)¹⁷

DISRUPTIVE INNOVATIONS

Disruptive innovations are changes that improve a product or service in ways that the market did not expect. For example, the introduction of Losec/Prilosec led to a seismic change in the management of peptic ulcers that traditional models had not predicted.¹⁹ Another example relates to β -blockers, which were contraindicated in patients with heart failure until the findings of a major study by a group in Gothenburg were reported.²⁰ The investigators achieved significant results using a lower dose than was used prior to the study and in a different kind of formulation.

With MinuteClinics (www.minuteclinics.com), the innovation is provision of low-cost, walk-in clinics in high-traffic areas such as drugstores and shopping malls. They have proved successful and can be considered to be an example of disruptive innovation.

Christensen has outlined three categories of disruptive ideas:

- innovations that are financially unattractive to the major stakeholders
- innovations that are financially attractive to the major stakeholders
- innovations that are unattainable to the major stakeholders because the technology or capital requirements are simply beyond their reach.

Scenario planning can be useful in exploring possible outcomes of disruptive innovations. However, as Lindgren and Bandhold have pointed out, there are also other reasons for using scenario planning (Figure 3).¹⁷

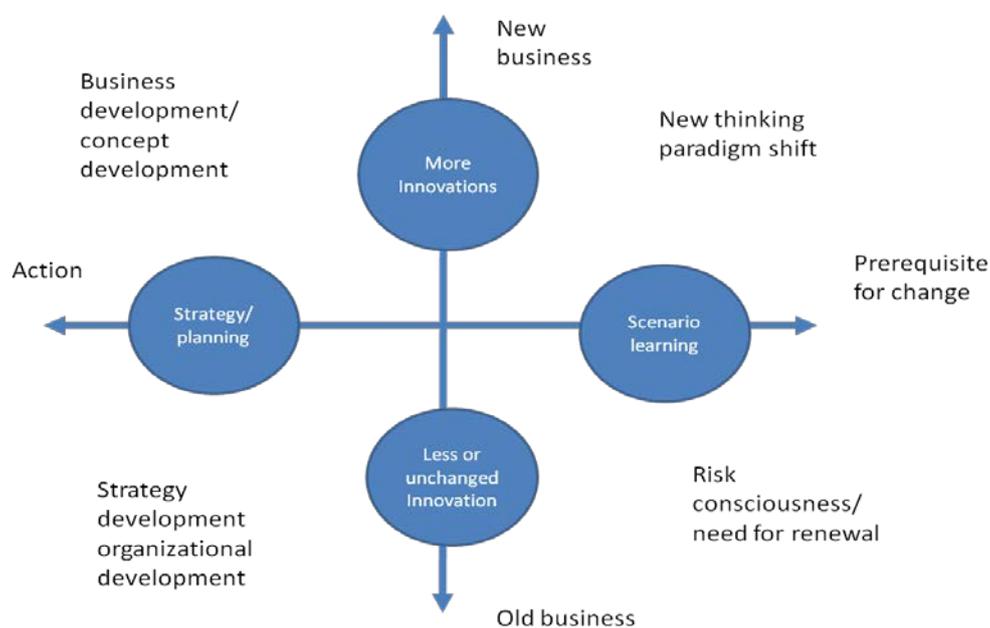


Figure 3. Scenario planning can be used for many purposes. Adapted from Scarce D., Fulton K (2004)¹

A PROPOSED PROCESS

There are a number of different approaches to scenario planning, but most of them are derived from the original work carried out within Royal Dutch/Shell and research undertaken by the RAND Corporation. The method and approaches differ owing to variation in the aim of the planning. Many use a six- to nine-step approach, and typical steps have been summarized in the Appendix (based on Schwartz, Ringland, Schoemaker, Peterson and Scarce et al.). If there are major differences in the views held about some factors by the experts involved, these can be treated as uncertainties.

A simple stepwise approach to running a scenario planning workshop is as follows.

1. Define the issue.
2. Identify and involve the major stakeholders.
3. Define what the future will look like.
4. What will be the main forces impacting on 3? Create a list.
5. Rank and combine the forces in 4.
6. Tabulate the forces by rank, number and predictability.
7. Using post-it notes, map out the forces on a white board.
8. Re-group the post-it notes together by potential scenario and trend (predictability and importance).
9. Select the most important key uncertainties and plot them on a scenario matrix.
10. Sense-check internally with the group for plausibility (re-do, if necessary).
11. Script the scenarios into a storyline and present internally.
12. Act on the scenario analysis.

IN SUM: RUNNING A SCENARIO PLANNING WORKSHOP

1. Define the issue you want to understand in terms of time, scope and decision variables. Such issues should encompass social, technological, economic, environmental and political domains. They may include legal, medical or scientific issues.
2. Identify the major stakeholders or players who have an interest in the issue. Identify the underlying assumptions, gather the available facts and decide whom to interview.
 - a. Seek out a cross-section of interviewees who represent diverse, provocative and dominant perspectives. Be sure to include key decision-makers and a cross-section of stakeholders. In most cases, interviews with astute people outside of your organization (such as customers, thought leaders and partners) can provide important insights.
 - b. Conduct the interviews.
 - c. Analyze the interviews, looking for patterns and points of similarity or difference. Are there any common or conflicting assumptions? Any major differences?
 - d. Formulate your conclusions and share them.
3. Articulate the 'official future'.

- a. Identify the assumptions.
 - b. Research appropriate sources.
 - c. Analyze your data.
 - d. Share the future with the internal stakeholders.
 - e. Test the official future.
 - f. Identify key questions.
 - g. Agree which elements of the model have a high level of certainty.
5. Identify and study the **main** forces in the official future that are shaping the issues defined in step 1.
 6. Create a master list of forces (F) that could change the industry (topic) in the next 10 years (trends).
 7. How important is a particular force (in relation to the others) in shaping the future of the industry (topic) (rank and combine)?
 8. Compile a table by giving each force a number and then including a sentence in the second column of the table to describe that force. Rank the forces (with 1 as the highest ranking), score the importance on a scale of 1–5, and score the predictability on a scale of 1–5.

Number	Force*	Rank†	Importance (score 1–5)‡	Predictability (score 1–5)§ (uncertainty/certainty)
1				
2				
3 to 100				

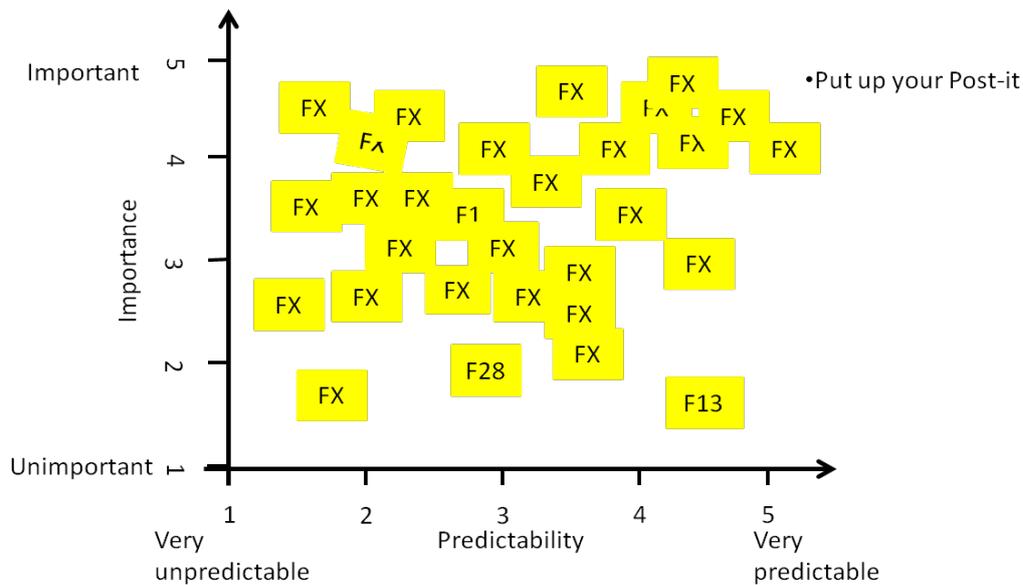
*The forces should be related to the issue.

†Where 1 is the highest ranking.

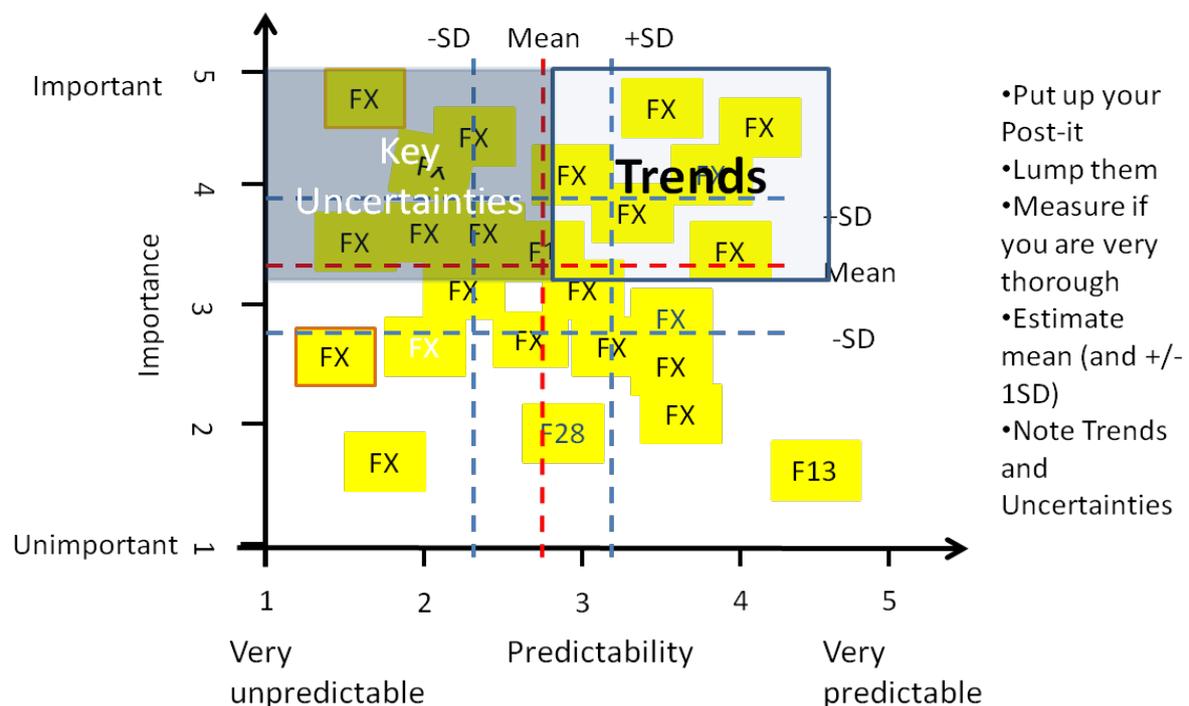
‡Where 5 is the most important.

§Where 5 is the most predictable.

9. On a white board, draw two axes as below. Transfer the number of each force to a Post-it note and place these notes on the graph according to the scores in the fourth and fifth columns of your table.

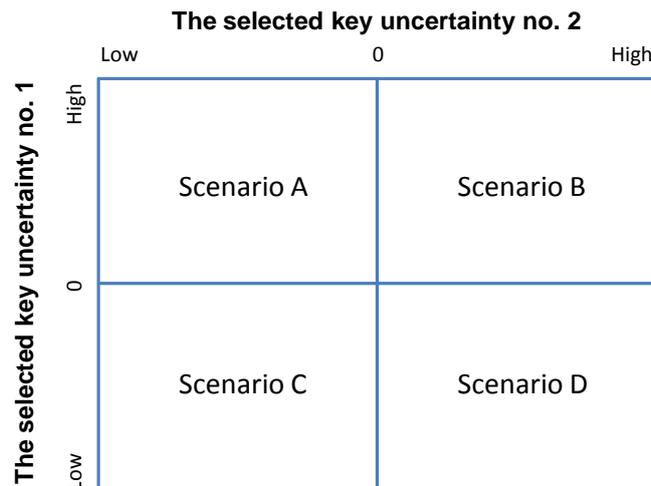


10. Note the potential scenarios by circling them, rearrange the Post-it notes if necessary, measure and draw the average line to divide the four squares. Identify the trends (very predictable and important forces) and the key uncertainties.

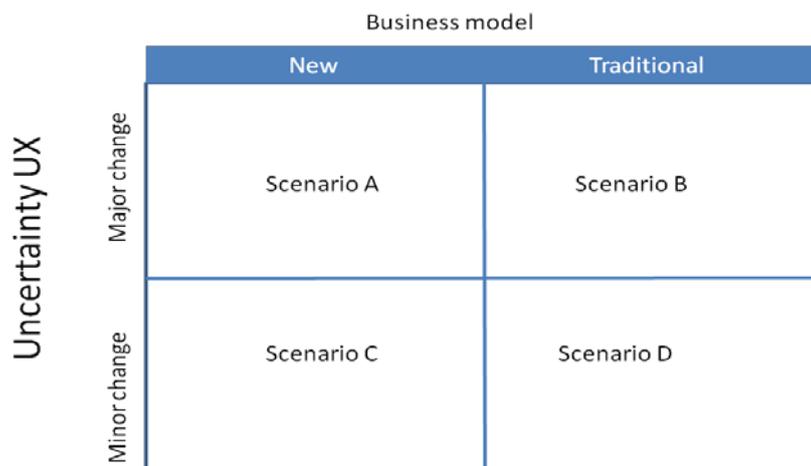


11. Identify trends or predetermined elements that affect the main forces (e.g. the greying of the world; use drawings to explain).
12. Identify key uncertainties (forces deemed important whose outcomes are not very predictable) from the list of 3. (Ask, assume, three is a good number)
13. Select the two most important key uncertainties.

- a. Draw a table of key uncertainties. Reformulate the description of the forces as a question.
 - b. Draw a table of trends.
14. Plot the most important uncertainties on a scenario matrix in an appropriate way depending on your issue (see the principle figure below with 2 selected key uncertainties, which can have different unpredictable outcomes, here indicated as low and high. From the outcome combinations it is possible to create 4 different equally plausible scenarios A-D). Identify a set of scenarios that is considered to be relevant to your area.



The second figure shows an example where one of the critical uncertainties is the business model, and the other is uncertainty UX entailing either minor or major change.



Assess the internal consistency and plausibility of the initial scenarios. There should be internal consistency – if there is not, put these aside and create new scenarios so that you have a wide range of outcomes.

- a. Are the main future trends all mutually consistent?

- b. Can the outcomes postulated for the key uncertainties co-exist?
 - c. Are the presumed actions of stakeholders compatible with their interests?
15. Assess the revised scenarios in terms of how the key stakeholders might behave.
 16. Carry out additional research, re-examine the consistencies, and portray each of the scenarios in an influence diagram.
 17. Construct a story to describe the scenarios.
 18. Re-do and re-assess, and present.
 19. Act!

You are ready. Welcome to the future!

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Useful links

www.juergendaum.com/news/09_08_2001.htm (Royal Dutch/Shell case study).

www.ibm.com/services/us/gbs/bus/html/bcs_strategyplanning.html (Enterprise of the future. Global CEO Study 2008. Analyzes and gives case studies across 10 industry sectors including life sciences.

<http://www.iftf.org/> (Institute for the Future)

<http://www.altfutures-afa.com/about.asp> (Alternative Futures Associates)

www.gsk.com/investors/presentations_webcasts.htm (Andrew Witty's 'progress with strategy' videos)

Appendix: Key Steps in Scenario Planning

Steps proposed by:				
Schwartz ²¹	Ringland ⁴	Schoemaker ²²	Peterson ¹¹	Scearce <i>et al.</i> ¹
Identify the focal issue or decision	Define the question, conduct interviews, use seven questions (page 87 of reference 4)	Define the issues to be understood. Make sure that the scope is broader than the industry (question). Identify the main stakeholders	Examine the future in light of a specific question. Separate the relevant aspects of the future that are knowable from those that are unknowable	Do as many interviews as time allows. This is essential to capture the underlying assumptions
Identify the key forces (in the environment)	Collect external data, identify the forces, and list the sources	Study the main forces that could shape the future	The forces (focal issues) should emerge from the planning process	Identify the focal issues
Identify the driving forces	Which factors change radically under paradigm shifts	The forces should cover the social, technological, economic, environmental and political domains	The focal issues should be used to assess the system. Uncertainties will emerge during discussion and will inform scenario development	The driving forces are the critical uncertainties
Rank by importance and uncertainty	Develop a list of relevant factors and categorize them as trends or uncertainties or factors where there are major questions. Uncertainty may relate to: <ul style="list-style-type: none"> • the degree of influence/ power • social values • consumer behavior • the shape of global trade Major uncertainties include: <ul style="list-style-type: none"> • regulation/ de-regulation • community values/ individualism • innovation/ technophobia 	Identify trends or predetermined elements that will affect the issues or forces. Identify the key uncertainties. Do a matrix that shows a correlation between the uncertainties. Select the two most important uncertainties. [See next section 'Running a scenario planning workshop']	Identify the alternatives as the system may evolve. A set of alternatives can be defined by choosing two or three uncertain or uncontrollable driving forces The alternatives should imaginatively but plausibly push the boundaries of commonplace assumptions about the future. This set of alternatives provides a framework around which scenarios can be constructed	Separate the official future from the alternatives

	<ul style="list-style-type: none"> • open cultures and trading/ closed and restricted world trade 			
Selecting the scenario logics by grouping the issues/key drivers	Group the ideas, and build and populate with a story line, including the main driving forces and uncertainties of each scenario	Assess the internal consistency and plausibility. Questions to ask: <ul style="list-style-type: none"> • are the main future trends mutually consistent? • can the uncertainties all co-exist? • are the actions of the stakeholders compatible with interests? 	A set of scenarios should usefully expand and challenge current thinking about the system. The appropriate number of scenarios is generally considered to be three or four	Synthesize and combine the driving forces according to: the degree of importance for the focal issue, the degree of uncertainty surrounding those forces
Flesh out the scenarios	Name the scenarios and use 'the elevator pitch'	Assess the revised scenarios in relation to the stakeholder's behavior	Convert the key alternative scenarios into dynamic stories by adding a credible series of external forces and players' responses. Each story should track the key indicators	Publish or publicly discuss the scenario
What are the implications of the key trends and uncertainties	Walk through the scenarios and try to describe them	Re-examine the internal consistencies of the learning scenarios. Use feedback loops	Simulations may be used to test the likelihood of each scenario	Prepare narratives (be aware that these are time-consuming to write and to read)
Identify the leading indicators and signposts	Identify descriptors for the different scenarios that will differentiate them. Should report the focal issue	Reassess the uncertainties and all the steps	Each scenario should have a name and be tested for consistency and plausibility	
Communicate the scenarios	Involve the interviewees, feedback via PowerPoint, text etc. and outline a process for the future	Present the final scenario using PowerPoint etc.	Scenario planning that involves stakeholders can provide a forum for policy creation and evaluation. Should be communicated	Act on the scenarios, to inform and inspire action